

CONVERSION FACTORS, SELECTED TERMS, ABBREVIATIONS, AND CHEMICAL FORMULAS

CONVERSION FACTORS

Multiply	By	To obtain
micrometer (μm)	0.00003937	inch
millimeter (mm)	0.03937	inch
centimeter (cm)	0.3937	inch
microliter (μL)	0.0000338	ounce, fluid
milliliter (mL)	0.0338	ounce, fluid
	0.000264	gallon
liter (L)	0.2642	gallon
nanogram (ng)	3.53×10^{-11}	ounce
microgram (μg)	3.53×10^{-8}	ounce
milligram (mg)	0.0000353	ounce
gram (g)	0.03527	ounce, avoirdupois
kilopascal	0.1450	pound per square inch
picocurie (pCi)	0.037	Becquerle (Bq)

Temperature: Water and air temperature are given in degrees Celsius (°C), which can be converted to degrees Fahrenheit (°F) by use of the following equation:

$$^{\circ}\text{F} = 1.8(^{\circ}\text{C}) + 32$$

Selected Terms

Editors and authors of the *National Field Manual* have attempted to use terms common in the water-quality community. Some of the terms used have restricted meanings within the context of this report. The following terms either are used in a context familiar primarily to USGS personnel, or in a format that is more succinct, or that is considered to be more specific than a common usage:

Accuracy: The degree of agreement of a measured value with the true or expected value (from Taylor, 1987).

Analyte (target analyte): "Substances being determined in an analysis" (from Bennett, 1986). The term target analyte is used in this report to refer to any chemical or biological substance for which concentrations in a sample will be determined. The

definition for target analyte does not include field-measured parameters such as temperature, specific electrical conductance, pH, dissolved oxygen, Eh, alkalinity, color, or turbidity.

Bias: Systematic error inherent in a method or caused by some artifact or idiosyncrasy of the sample measurement, collection, or processing system. The error can be positive (indicating contamination) or negative (indicating loss of analyte concentration) (from Taylor, 1987).

Contaminant: Biological or chemical substances added to the medium of concern, commonly through human activity.

Contamination (of water): Change of ambient water composition by the addition of biological or chemical substances as a result of human activity or natural processes. Addition of such substances can be detrimental to the quality of the water resource.

Data-quality requirements: The subset of data-quality objectives pertaining specifically to the analytical detection level for concentrations of target analytes and the variability allowable to fulfill the scientific objectives of the study.

Quality Assurance (QA): The systematic management of data-collection systems by using prescribed guidelines and criteria for implementing technically approved methods and policies. Quality assurance incorporates a comprehensive plan that outlines the overall process for providing a product or service that will satisfy the given requirements for quality.

Quality Control (QC): The specific operational techniques and activities used to obtain the required quality of data. Quality control consists of the application of technical procedures to achieve prescribed standards of performance and to document the quality of collected data. Quality-control data are used to identify and evaluate any corrective actions necessary to improve performance or data interpretation to acceptable levels.

Trace element(s): For the purpose of this report and to maintain consistency with common usage, the term trace element(s) is used to refer to metal and nonmetal inorganic elements such as arsenic, antimony, selenium, and tellurium that usually are present in natural surface-water and ground-water systems in concentrations less than 1 mg/L (modified from Hem, 1985). Common usage of this term, as defined above, is inexact and not rigorous with respect to aqueous chemistry.

Abbreviations

cc	cubic centimeter
lb/in ²	pounds per square inch
min	minute
mg/L	milligram per liter
µg/L	microgram per liter (equivalent to parts per billion (ppb))
mL/min	milliliters per minute
ng/L	nanogram per liter
ng/µL	nanogram per microliter
pCi	picocuries
ppb	parts per billion (see µg/L)
ANC	acid neutralizing capacity
ASR	Analytical Services Request
BNA	base-neutral acids
CFC	chlorofluorocarbon
CH	Clean Hands
DH	Dirty Hands
DIC	dissolved inorganic carbon
DIW	distilled/deionized water
DOC	dissolved organic carbon
FA	filtered, acidified sample
FAM	filtered, acidified sample for analysis of mercury
FAR	filtered, acidified sample for analyses of selected radiochemicals
FCA	filtered, chilled, acidified sample
FCC	filtered, chilled sample
FEP	fluorinated ethylene-propylene
FU	filtered, untreated sample
GCC	glass, chilled sample for analysis of nonvolatile organic compounds
GC/MS	gas chromatograph/mass spectrophotometer
IBW	inorganic-grade blank water (water with certified analysis of trace elements and other inorganic constituents and used for blank QC samples for analysis of inorganic constituents)
MBAS	methylene blue active substances
NAWQA	National Water-Quality Assessment Program
NFM	<i>National Field Manual for the Collection of Water-Quality Data</i>
NPDES	National Pollutant Discharge Elimination System

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NWQL	National Water Quality Laboratory of the U.S. Geological Survey (Denver, Colo.)
OWQ	Office of Water Quality of the U.S. Geological Survey (Reston, Va.)
PBW	pesticide-grade blank water (water certified free of pesticide compounds)
PCB	polychlorinated biphenyl
QA	quality assurance
QC	quality control
QW	quality of water
QWSU	Quality of Water Service Unit of the U.S. Geological Survey (Ocala, Fla.)
RA	raw, acidified sample
RAH	raw, acidified sample for analysis of antimony, arsenic, and (or) selenium
RAM	raw, acidified sample for analysis of mercury
RCB	raw, chilled sample
RU	raw, untreated sample
RUR	raw, untreated sample for analysis of selected radiochemicals
RUS	raw, untreated sample for analysis of stable isotopes
SOC	suspended organic carbon
SPE	solid-phase extraction
TOC	total organic carbon
URL	Uniform Resource Locator
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
VBW	volatile-organic-compounds-grade blank water (water certified free of VOCs)
VOC	volatile organic compounds
WCA	raw, chilled, acidified nutrient sample

Chemical Formulas

Ag_2S	silver sulfide
AgNO_3	silver nitrate
BaSO_4	barium sulfate
$^{13}\text{C}/^{12}\text{C}$	carbon-13/carbon-12 isotope ratio
^{14}C	carbon-14
CuSO_4	copper sulfate
$^2\text{H}/^1\text{H}$	deuterium/protium isotope ratio
$^3\text{H}/^3\text{He}$	tritium/helium-3 isotope ratio
HCl	hydrochloric acid
H_2O	water
H_2S	hydrogen sulfide
H_2SO_4	sulfuric acid
H_3PO_4	phosphoric acid
HNO_3	nitric acid
$\text{HNO}_3/\text{K}_2\text{Cr}_2\text{O}_7$	nitric acid/potassium dichromate
NaCl	sodium chloride
NaOH	sodium hydroxide
$^{15}\text{N}/^{14}\text{N}$	nitrogen-15/nitrogen-14 isotope ratio
$^{18}\text{O}/^{16}\text{O}$	oxygen-18/oxygen-16 isotope ratio
$^{34}\text{S}/^{32}\text{S}$	sulfur-34/sulfur-32 isotope ratio
SrCl_2	strontium chloride